REMARKS/ARGUMENTS

The Office Action mailed on September 26, 2003 rejected claims 36-39 as anticipated by Little (5,119,408) as well as McCroskey (5,023,895). Also, claims 1-40 were rejected as unpatentable over Hultgren (6,217,334) and McCroskey.

Applicants respectfully traverse the Section 102 and 103 rejections and submit that all claims are in condition for allowance.

The Section 102 Rejection

Claims 36-39 were rejected as anticipated by Little. The Office Action asserted that Little discloses "an apparatus comprising an x-ray source 26, a scintillator and radiation detector 28 coupled together, a rotatable-table 54 positioned between-the-gray source and the scintillator, and a computer coupled to the detector to generate a digital model with the scanned data." The Office Action also asserted that "McCroskey et al disclose[s] an apparatus comprising an x-ray source 12, a scintillator 27, a radiation detector 29 coupled to the scintillator, a rotatable table 24 positioned between the x-ray source and the scintillator, and a computer 60 coupled to the detector to generate a digital model with the scanned data."

Little shows to a method for inspecting a component having dimensions larger than a fan beam angle of an x-ray inspection system. Little includes the steps of: providing an x-ray beam having a selected fan angle in a source focal point; positioning a portion of the component substantially completely within the x-ray beam; rotating the component 360 degrees around a component inspection rotational axis; collecting the attenuated x-ray beam that passes through the component during rotation; generating a multiplicity of electrical signals responsive to the collected x-ray beam; incrementally moving the component inspection rotational axis about the x-ray source focal point to position another portion of the component within the x-ray beam; and repeating the steps of rotating the part 360 degrees about a component inspection rotational axis and incrementally moving the part inspection rotational axis about the x-ray source focal point until the entire component has passed through the fan beam.

Little fails to show at least an apparatus to create a digital model of a patient's teeth. Little does not show the specifics of a rotatable table positioned between the radiation source and the scintillator, the table being adapted to support an impression of the patient's teeth. Little also does not show a computer coupled to the detector to generate the digital model with scanned data. Since a Section 102 rejection requires each and every element in the claim be present, and since at least 3 elements recited in claim 36 are missing, Little cannot anticipate independent claim 36 and those dependent therefrom. Additionally, Little fails to show the specifics of the dependent claims. For example, Little fails to show a rotatable table adapted to support an upper teeth impression, a lower teeth impression and a bite impression.

McCroskey relates to an industrial CT system for three dimensional imaging which includes a three dimensional cone beam of hard radiation fixed with respect to a two dimensional scintillation detector array. The object is positioned on a turntable interposed between the radiation source and detector array. Data from two dimensional views are stored as the object is rotated on the turntable about a fixed axis. The data is sufficient upon completion of one revolution to construct a transparent three dimensional image of the object. A positioning encoding arrangement adjusts for variations in the object's mass density to optimize scan-compute times while enhancing image resolution.

Again, McCroskey fails to show at least an apparatus to create a digital model of a patient's teeth. McCroskey does not show the specifics of a rotatable table positioned between the radiation source and the scintillator, the table being adapted to support an impression of the patient's teeth. McCroskey also does not show a computer coupled to the detector to generate the digital model with scanned data. Since a Section 102 rejection requires each and every element in the claim be present, and since at least 3 elements recited in claim 36 are missing, McCroskey cannot anticipate independent claim 36 and those dependent therefrom. Additionally, McCroskey fails to show the specifics of the dependent claims. For example, McCroskey fails to show a rotatable table adapted to support an upper teeth impression, a lower teeth impression and a bite impression.

The Section 103 Rejection

The Office Action rejected claims 1-40 as follows:

> *"Hultgren discloses a method of creating a digital model of a patient's teeth from an impression taken thereof. Hultgren discloses the invention except that the impression is scanned using a laser scanner rather than an x-ray source. McCroskey et al. disclose that an x-ray scanner is an equivalent structure known in the art to create three-dimensional digital images of objects. Therefore, because these two scanners were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute an x-ray scanner for the laser scanner used by Hultgren."*

Hultgren discloses a dental and soft tissue scanning method and system which uses fast laser line scanning techniques of negative image impressions, whereby an array of electronic data is generated. In operation the array of negative image scan data is generated by a scanner 60 and provided to a processor 501. The negative image scan data may be saved in a memory device 504 as a permanent record of the baseline condition of the patient's teeth, or temporarily prior to one of several other options. The processor 501 may convert the data to a positive image for display on the video display unit 503 for teaching or educational purposes with the patient. Alternatively, the positive information data may be transmitted to a remote PC 505 for storage, study by a consulting dentist (or physician), or fabrication of a study cast by fabrication device 507. These and other options may be selected by the user of computer 500 via the input device 506. The programming operation of the processor 501 provides for scanning each of the upper and lower impressions and the bite registration impression. These scans provide the information necessary to create an electronic equivalent of a physical study cast.

As admitted in the Office Action, there is no suggestion in Hultgren to modify the laser scanning technique with an x-ray source. Hultgren discloses in depth the laser scanner, and characterizes in a detailed review of the prior art as "In the past, several devices have been designed for the electronic imaging of teeth. Also, other devices are known which utilize numerical data to create prototype devices. While known examples of such systems and devices follow, generally such systems do not provide the accuracy required for orthodontic work. Instead, such systems are generally useful only for crowns, fillings, etc." Hultgren at Col. 2,

lines 14-21. No where in Hultgren does it suggest the use of X-ray source to image dental models and generating the digital model with scanned X-ray data.

Applicant notes that the present rejection does not establish *prima facie* obviousness under 35 U.S.C. § 103 and M.P.E.P. §§ 2142-2143. The Examiner bears the initial burden to establish and support *prima facie* obviousness. *In re Rinehart*, 189 U.S.P.Q. 143 (CCPA 1976). To establish *prima facie* obviousness, three basic criteria must be met. M.P.E.P. § 2142. First, the Examiner must show some suggestion or motivation, either in the Hultgren et al. reference or in the knowledge generally available to one of ordinary skill in the art, to modify the reference so as to produce the claimed invention. M.P.E.P. § 2143.01; *In re Fine*, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). Secondly, the Examiner must establish that there is a reasonable expectation of success for the modification. M.P.E.P. § 2142. Thirdly, the Examiner must establish that the prior art references teach or suggest all the claim limitations. M.P.E.P. §2143.03; *In re Royka*, 180 U.S.P.Q. 580 (CCPA 1974). The teachings, suggestions, and reasonable expectations of success must be found in the prior art, rather than in Applicant's disclosure. *In re Vaeck*, 20 U.S.P.Q.2d 1438 (CAFC 1991). Applicant respectfully submits that a *prima facie* case of obviousness has not been met because the Examiner's rejection fails on at least two of the above requirements.

First, Applicant notes that the Hultgren et al. reference fails to teach or suggest all the claim limitations of independent claims as discussed above. These limitations are not reasonably taught or suggested in the cited art reference. Secondly, Applicant notes that no motivation or suggestion, either in the cited art reference or in the knowledge generally available to one of ordinary skill in the art, has been cited by the Examiner to modify the Hultgren et al. reference so as to produce the claimed invention. As noted above, the Hultgren et al. reference fails to teach or suggest using X-ray sources to image dental impressions or models. In fact, the Hultgren et al. reference teaches away form Applicant's invention as one skilled in the art would have been generally discouraged from applying X-ray to solve problem since Hultgren states that laser scanning is advantageous in providing "a cost effective, relatively fast, and efficient system and method for electronically scanning dental surfaces or dental materials such that the resulting data may be manipulated for a wide variety of dental and/or medical purposes and uses."

Hultgren cited an impressive list of prior art to solve the problem, and X-ray type of scanner was not contemplated by Hultgren.

Applicant points out that the Examiner bears the initial burden of factually establishing and supporting any *prima facie* conclusion of obviousness. *In re Rinehart*, 189 U.S.P.Q. 143 (CCPA 1976); M.P.E.P. § 2142. If the Examiner does not produce a *prima facie* case, the Applicant is under no obligation to submit evidence of nonobviousness. Id. In the instant case, the Examiner has not pointed to any evidence in Hultgren et al., or how knowledge of those skilled in the art, provide a suggestion or motivation to modify the reference teaching so as to produce the claimed invention. See *In re Zurko*, 59 U.S.P.Q.2d 1693 (Fed. Cir. 2001) ([I]n a determination of patentability .... the Board cannot simply reach conclusions based on its understanding or experience - or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings).

Under Vaeck, absent any evidence of a cited suggestion or reasonable motivation in the Hultgren et al. reference, or knowledge of those skilled in the art, for applying X-ray sources to generate dental models, *prima facie* obviousness of claim 1 (and dependent claims 8-12) has not been established. As such, it is respectfully requested that the § 103(a) rejection of independent claims be withdrawn and the claims be allowed.

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

Bao Tran
Reg. No. 37,955

By: James M. Heslin
Reg. No. 29,541

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, Eighth Floor
San Francisco, California 94111-3834
Tel: 650-326-2400
Fax: 415-576-0300
Attachments
JMH:jke
60062538 v1